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SUBSTITUTE CROPS AND DEVELOPMENT OF LIVESTOCK BREEDING IN THE HIGHLANDS WHERE THE COCA LEAF IS CONSUMED[1]

by

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1/ The appended document by Mr. Argos Rodriguez was originally presented to the Consultative Group on Coca Leaf Problems which met at Lima from 26 November to 7 December 1962. It will represent a valuable contribution to this meeting also, and it is therefore distributed to participants.

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SUBSTITUTE CROPS AND DEVELOPMENT OF LIVESTOCK BREEDING
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The Inter-American Consultative Group on Narcotics Control which was organized y the United Nations under the special programme of technical assistance provided or by General Assembly resolution 1395 (XIV) met at Rio de Janeiro in 1961.

The meetings of this Group, which were convened at the request of the Governments f Brazil and Peru, were attended by senior officials of the competent control epartments of Argentina, Bolivia, Brazil, Canada, Chile, Colombia, Cuba, Ecuador, exico, Panama, Paraguay, Peru, United States of America, Uruguay and Venezuela. bservers from the World Health Organization and the Pan American Sanitary Bureau and he Assistant Secretary-General of Interpol also attended the meetings. The nited Nations provided the secretariat services for the Group, and also the services f consultants.

The Group considered the question of international and national narcotics control rom a comprehensive point of view, particularly its specifically South American aspects. ne of the aspects considered was the problem of coca leaf chewing in the highlands of olivia and Peru and in some districts of southern Colombia. The Groups finding was hat "the chewing of (coca) leaves constituted a dangerous habit, detrimental not only to he health, but also to the productivity of the persons affected and thus formed an bstacle to economic development". Another assertion made was that measures of rohibition and police enforcement could not, by themselves, solve the problem of oca leaf chewing; in other words, one of the Groups conclusions was that the problem ould only be solved by economic and social advancement of the affected regions, which, n the Group's view, could not be accomplished without the general progress and evelopment of the countries concerned as a whole. However, it realized - and this s clear from the records of the proceedings - that the measures required to bring bout the necessary far-reaching development in economic and social matters could not e taken within the limited resources of the affected countries themselves, and that arge-scale assistance would be needed. The Group then stated that coca leaf chewing hould be included among the problems dealt with under national economic and social evelopment schemes with outside multilateral or bilateral aid.

The Group further concluded that the international organizations engaged in rogrammes of technical assistance - in particular FAO and WHO - could play a very seful part in this connexion. It was of the opinion that, in view of the difficulties

that will inevitably arise in tackling this question, a seminar, to be organized with the technical assistance of the United Nations, for officials concerned with the problem would be very useful either for the adoption of more appropriate measures or for the evaluation of the various development programmes in so far as they relate to the abolition of the coca leaf chewing habit.

The seminar having been organized at the request of the Government of Peru, the Consultative Group on Coca Leaf Problems considered it desirable when the agenda was being prepared to ask FAO for its opinion under item (aa) of the work programme on "possible economic measures connected with the problem", particularly as regards the possibility of applying the following measures:

1. Introduction of substitute crops and promotion of livestock breeding in the highlands where the coca leaf is consumed.

2. Contribution to the solution of the problem which may be afforded by resettlement programmes adopted as part of a general policy.

In other words, FAO is approached with four basic requests, namely:

1. To give a technical opinion on questions relating to substitute crops for the coca bush.

2. To report on current programmes for the promotion of economic and social development, whose implementation necessarily involves the coca leaf chewing problem.

3. To indicate the possible future contribution of technical assistance programmes to the solution of the coca problem.

4. To make such recommendations as the preceding points may suggest for the solution of the problem viewed as an aspect of the various national problems of development or Indian integration.

We are facing a complex problem with a great many attendant circumstances which are responsible for the existence of a pernicious habit affecting a large number of human beings. The general result is a vice in some, but also a need in many of the victims to chew coca leaf as a means of making up from the action of the alkaloid the minimum nutrition required to sustain human life socially and at work, in others a need to chew as a means of reducing the daily expenditure on food in order to have some money to spend on other no less important requirements such as food or care of the family.

In other words, we are facing an immense economic, technical and nutritional problem: economic, since the crop is undoubtedly a source of revenue for the producers

and the countries in which it is grown; technical, since a co-ordinated, comprehensive and probably long-term plan is needed to achieve any success with substitute crops; nutritional, since it is an urgent matter to provide coca leaf chewers with the necessary food to enable them to abandon the habit, as has been pointed out on many occasions previously and during this seminar.

Bearing these aspects in mind, I would again remind you that FAO's function is to convince by scientific demonstrations, to assist national organizations in the broad sense of making the individual feel that he is capable of coping with his own problems, to advise rather than to coerce, to persuade by personal example. The suggestions with respect to substitute crops are based on two main principles which indicate the philosophy underlying the approach to this problem adopted by the FAO Plant Production and Protection Branch.

1. It is pointed out that sudden interference with the cultivation and harvesting of coca by the Indians could be successful as far as the people and countries involved are concerned on the following two basic conditions:

(a) that a crop is found that suits the environment in which the coca bush grows and that gives about the same return as coca;

(b) that measures are devised to ensure full satisfaction of the nutritional needs of those individuals who have adopted the habit through under-nourishment.

(c) Lastly, FAO states that research and agricultural tests should be conducted to acclimatize suitable crops in the areas in which the coca bush has its habitat. These are, in brief, the ideas of the FAO Plant Production Division, but before considering recommendations let us see what were the views of the Consultative Group on Coca Leaf Problems as regards the recommendations concerning the possibility of limiting the production and regulating the distribution of the coca leaf and gradually abolishing the habit of coca leaf chewing, which are summarized in paragraph (e) of its report NAR/COCA.CONF./3., Lima 1962, which is headed "Substitute crops" and states that the governments concerned should so far as possible encourage the growing of substitute crops. They might inter alia, establish a preferential system of agricultural, economic and technical assistance for the benefit of any coca leaf producer wishing to grow some other crop. As a complement to this policy it would be desirable to take administrative steps to prevent agricultural loans being granted for the production of coca leaves. The Agricultural Banks of Peru and Bolivia have already adopted this rule, and the purpose of this recommendation is to make the rule, which is not yet applied universally, an official regulation.

It would be advisable, when granting agricultural loans, to give preference to those agriculturists who do not produce coca leaves and undertake not to grow coca bushes.

Similarly, it would be well to consider the desirability of requiring any land owner who grows coca bushes as well as other crops to pay higher interest than those who do not produce coca leaves.

We are obviously now getting nearer to the heart of the problem. In the endeavour to find substitute crops, account must be taken of a great many factors, ranging from the strictly technical or agricultural to the economic; for the profit-earning capacity of the crops must not be overlooked.

The coca bush is not a very exacting plant. It flourishes in vast areas of South America between 300 and 2,500 metres above sea level and requires a tropical to sub-tropical climate with temperatures varying between 22 and 32° centigrade. While in some areas the transplanted seedling is protected from insolation by taller trees, the most general method is to transplant the seedlings then leave them untended. until the time comes to harvest the leaves. Thus it is a hardy species, seldom affected by fungoid or insect pests. Once the bush is established it lives for many years - the books mention 20 to 30 years - during which time cultivation is reduced to watering the bushes two or three times in the winter season in the valleys and to weeding twice in the rainy season in mountainous areas and valleys.

It follows that there is generally no replacement of plants, fertilizing or plant care in the form of removing bushes with low yields; on the contrary, the crop is left to its fate.

There is another point which must be mentioned again. Two days ago in the seminar Dr. Carranza, the Peruvian representative, observed, very appropriately, that the land on which the coca bush is grown is of two distinct types - sloping and flat - to which from an agricultural point of view might be added third-rate land where manuring, watering and cultivation are very difficult and first-rate land which is easier to cultivate. The main problems with the third-rate land are the difficulty of working on hillsides and actual soil constituents.

As far as concerns substitute crops, we are already aware of the need for research and experiment to find other crops which, within about the same profit margins, will produce more for the same amount of work or respond to a greater effort by producing a good and very remunerative crop.

Passing on to another no less important aspect of substitution, I am bound to refer to the publication "Ten years' Operation of the State Coca Monopoly in Peru" which states that as the coca bush is mainly grown under conditions and on land unsuitable for other crops, the economy of these widespread centres revolves around the product, in which 177 million sols have been invested. Of course there is a contradiction between the unsuitable land referred to in that publication and the first-class land referred to by the Peruvian representative, Dr. Carranza, and my own personal experience of the land in Yungas and Chapare (Bolivia).

That publication also states that, according to the Monopoly's surveys, there are 13,975 cultivators of the coca bush and 11,767 merchants trading in coca leaves. It further states that, in addition to transactions by occasional middlemen and others interested in barter, it is estimated that 110,683,230 sols change hands in the coca leaf trade which has its origin in the smallholding system. The net yield from taxes in 1959 was more than 27 million sols.

As I do not wish to tire you, I will mention only one further point relating to the census of real property completed on 31 December 1959 in the three (northern, central and southern) regions of the country, which gives the following figures: 13,975 rural properties and leasehold, 16,092 hectares, and 296,090,050 bushes with a probable yield in 1960 of 11,068,323 kg. It is encouraging that production in 1960 amounted to 9,003,274 kg and estimated production in 1961 was 8,753,576 kg, indicating a slow but seemingly steady decline.

The report concludes that the collection of taxes is not the only problem involved in the administration of the Coca Monopoly, there being many other problems that have to be faced in order to ensure that no interests suffer. The Monopoly collaborates in the production and sale of the leaf and in finding markets, maintains a balance between landlord and grower, helps the small grower with advice when pests appear or weather is bad, and campaigns to prevent his abandoning land given over to monoculture. Advice to growers has taken the form of dissemination of literature, the sending of Quechua-speaking personnel to explain the Monopoly's proposals, etc., etc.. None of all this has been said in a spirit of criticism but only to indicate how difficult it is for the experts to work towards crop substitution with definite support under national plans. I shall revert to this point shortly.

Let us now look at the position in Bolivia. It was stated in an article by Mr. Raúl Pérez Alcala in the Bulletin on Narcotics, Vol. IV, No. 2, April-June 1952 (United Nations, Department of Social Affairs, New York) (page 14) that "there are about 6,000 hectares under coca in the Yungas region of La Paz, and about 600 in Cochabamba. The yield per hectare is approximately 700 kilogrammes, giving an annual income of some 20,000 bolivianos." (Note that at the time bolivianos were 170 to the dollar). Pérez Alcalá said that "the national production of coca is estimated at 4,500,000 kilogrammes, of which over 450,000 kilogrammes are exported to Argentina yearly".

Two days ago the Bolivian Minister of Health told us most sincerely that strong vested economic interests have come out against proposed plans to reduce or abolish coca-bush cultivation. In Bolivia no less than 23,500 hectares of good sub-tropical farm land are used for coca-bush cultivation, with an average yield of 12,000,000 kg of leaves. The experts estimate that approximately half this quantity is chewed and the remainder is converted into cocaine hydrochlorate for export. If we estimate the value at 10 sols per kg, which is the Peruvian Coca Monopoly's estimate, but remember that it is an artificial value, since Bolivian coca contains a lower percentage of cocaine than the Peruvian (0.26 - 0.50 for Bolivia and 0.80 for Peru), we would arrive at an approximate and probably inaccurate figure of 120,000,000 sols.

Those figures show that in ten years of United Nations activity and advice the cultivated area has quadrupled, and it is reasonable to assume that production has also. Here is food for thought!

Summing up the preceding facts, we cannot but conclude, as far as crop substitution is concerned, that there are in Peru and Bolivia alone some 40,000 hectares under coca, involving transactions totalling 300,000,000 sols between the two countries; and there are 25,000 families in Peru either producing or trading in coca leaves and a, to me, unknown number in the producing areas of Bolivia.

For all these reasons an immediate start must be made on this problem of substitute crops. But the first steps, in FAO's opinion, must be experiments, surveys and studies so that when FAO does make a recommendation it will provide a sound and effective solution to the problem put to it.

Regarding tropical and sub-tropical crops whose soil and climatic requirements are similar to those of the coca bush, I should mention coffee, with an average yield of 2,000 kg per hectare in the Yungas region of Bolivia. A recommendation on coffee would

be useful if large producing countries voluntarily granted some preference to the disposal of coffee from former coca-producing areas - although I naturally put this forwa as a mere suggestion, since an awkward economic, and quite unromantic, problem is involved. Tea might also be considered as a promising crop, mainly because the yield per plant is high - apparently higher than that of the coca bush.

Among other crops which might be mentioned as suitable for conditions in these areas are citrus fruits, bananas, avocado pears, pineapples and yuccas; but every case demands tests and studies of cultivation methods, adaptation, productivity, costs of introduction, production, manufacturing and processing, packing and distribution. In short, the approach must be scientific, i.e. designed to obtain the best possible return from a crop by scientific methods; for that purpose crop substitution by itself is not enough; it must have many facets, e.g. restrictions to prevent coca bush cultivation from increasing and thus allow time for the initial scientific measures to get off to a good start. In that sense, the restrictions already imposed or which are to be imposed on coca-bush cultivation by countries like Peru and Bolivia are promising. There is also the purely technical aspect of research on remunerative crops to be introduced gradually but energetically in coca-producing areas.

On behalf of FAO, I recommend to this seminar the intensification of agricultural research to determine definitively which crops are truly remunerative. This work might be undertaken by existing or proposed new experimental stations and paid for out of national budgets or with funds from other sources which are opposed to coca-bush cultivation, the sole aim being to finance the necessary research.

However, this will not be all that is required, since adequate transport facilities to move crops are lacking, as are suitable industrial storage plants; and, in the matter of marketing, an understanding of the problem with which coca chewing confronts the countries concerned when they try to dispose of their produce on competitive markets. But all this is only what used to be known as "progress" - and is today called "national development". And so we come back to the first point on which we all agreed, namely that the coca leaf chewing problem is essentially an economic and social problem.

The second aspect of today's topic is the development of livestock breeding in the highlands where the coca leaf is consumed. In that context I want to tell you about the Integrated Nutrition and Food Programme (INFP), in which FAO is co-operating with UNICEF and the other specialized agencies taking part in the United Nations Andean-Indian Programme.

This technical assistance programme is being carried out in Peru as part of the Puno-Tambopata Programme by the Ministries of Work and Indian Affairs, Public Health and Social Welfare, Agriculture and Education; in Colombia with the technical co-operation of the Ministry of Health, the National Nutrition Institute and the Ministry of Education; in Bolivia with the Ministries of Rural Affairs and Health, and the Advisory Board on Colonization in particular. Under the National Rural Development Programme INFP activities are designed to improve the state of health of the Indian population through educational programmes the purpose of which is to obtain maximum yields of agricultural and livestock products to provide food through various interrelated activities, as the fundamental principles governing its activities show.

The following are some of the essential aims of INFP:

1. To provide courses on food and nutrition in schools and health centres.

2. To increase production of foodstuffs with a high nutritional value, e.g. vegetables, meat and fish.

3. To distribute foodstuffs with a high nutritional value, vitamin and mineral additives (powdered milk, etc.) to improve the Indian family's diet.

4. To train national staff in the various agencies taking part in INFP.

FAO is co-operating particularly in sections 2 and 3 of this programme which has already been in operation for a year, providing a variety of specialists for the project, e.g. in nutrition and home economics, agricultural extension work, horticulture, poultry-farming and rabbit-breeding. All these specialists have been or are taking part not only in seminars and specialized courses but are also doing field work in the laying-out and supervision of market gardens and farms and in nutrition, food and home economics projects. As an illustration of FAO's co-operation in national projects, there is the case of Peru, where 31 pilot market gardens have been started and demonstrations given in more than 92 schools on nutrition and food. It should be emphasized that all these projects are part of a systematic plan whereby it is hoped through education to promote better living conditions and hence to arouse disgust of the habit of coca leaf chewing.

The guiding principle is the same as that underlying the United Nations Andean-Indian Programme, namely to educate in the school, in the home and in the community in order to promote economic, and hence social, progress in the area.

The first stage, now completed by FAO experts taking part in INFP was largely signed to increase the production of vegetables, since they are foodstuffs with a gh nutritional value which must be introduced into the diet of the Indian population. has taken a year to teach how lettuce, cabbage, cauliflower, beetroot, parsley, lery, spinach, carrots, onions, tomatoes, squashes, radishes, green peas, asparagus d turnips, are grown, from sowing through bedding out to transplanting, manuring d protection against disease and pests.

As regards poultry, although incubation experiments in the highlands have proved satisfactory, the possibility is being considered of taking chicks to the schools part of a poultry development project now under way.

There is a school and family rabbit project now in operation, based on the loan a pair of rabbits which, once they have littered, are lent on in rotation, provision eing made for periodic replacement.

Before ending my account of the problems of the highlands I should like to put efore you an old FAO idea that now perhaps regains its topicality: namely that it ight be worth while to encourage the growing of indigenous crops, such as quinoa chenopodium quinoa), ulluco (ullucus tuberosus), oca oxalis (oxalis tuberosa), chita (amarantius caudatus), cañahua (chenopodium palidicaule), and mashua (tropeolum uberosus), all of which were very important native foodstuffs in the time of the nca empire, and some of which are rich in protein. All these crops would also need odern scientific treatment to increase yield, and develop vast areas inhabited by ndians who have until now lived in destitution.